Image Filtering

Corner Detection

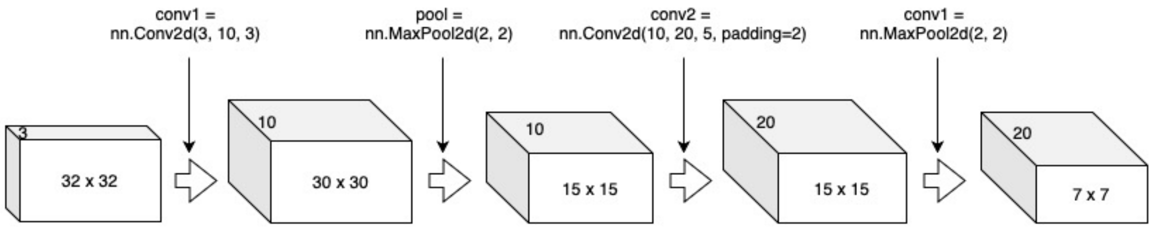
I start the implementation of the corner detection with the weight shown in the slides where it only has number 1 and 0. This kernel doesn't really show much a difference between different corners. My next attemp is to change the corner kernel weight to be ranged from 0 to 2, hoping to create a bigger difference. However, that result in a similar result.

Blur + Edge Dection

For the challenge, I pick to use blur along with vertical edge dection. This is because we have previously done vertical edge dection on full resolution, and now I want to see how big an impact the blur has. After the testing, I can tell that the full resolution does provide a more detailed edge dection. However, the blur image is still able to show the outline of the building.

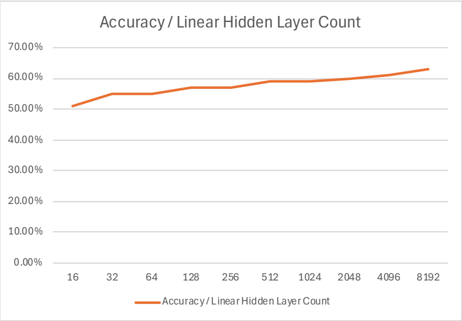
CNN

Architecture Diagram



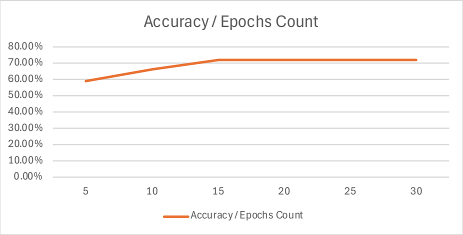
Testing impact of linear hidden layer count

Number of Linear Hidden Layer	Number of Parameters	Number of Epochs	Time Taken for Training (HH:MM:SS)	Overall Accuracy (%)
16	13496	5	0:00:57	51.00%
32	37022	5	0:01:00	55.00%
64	68734	5	0:00:54	55.00%
128	132158	5	0:00:55	57.00%
256	259006	5	0:01:02	57.00%
512	512702	5	0:00:58	59.00%
1024	1020094	5	0:01:01	59.00%
2048	2034878	5	0:01:14	60.00%
4096	4064446	5	0:01:37	61.00%
8192	8123582	5	0:02:12	63.00%



Testing impact epochs count

Number of Linear Hidden Layer	Number of Parameters	Number of Epochs	Time Taken for Training (HH:MM:SS)	Overall Accuracy (%)
512	512702	5	0:00:58	59.00%
512	512702	10	0:02:13	66.00%
512	512702	15	0:03:14	72.00%
512	512702	20	0:04:13	72.00%
512	512702	25	0:05:22	72.00%
512	512702	30	0:06:46	72.00%



What Helps?

It seems like increasing number of epochs and number of linear hidden layer helps. However, you can easily see the diminish of return after a while.